



# HIGHWAY 64 (SR-15) BICYCLE AND PEDESTRIAN PLAN



**THE CORRADINO GROUP**



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## I. Introduction & Overview

Bicycle and pedestrian plans are created to increase walking and biking trips by creating comfortable facilities for all users. The network is intended to serve many trip purposes including home to work, school, or retail areas and will provide good opportunity for recreational and exercise purposes. Offering safe, connected facilities for walkers and bikers encourages those in the community to substitute vehicular trips with walking and biking as well as encouraging exercise which will lead to improved health for the community. To encourage walking and biking trips the City of Bolivar wants to provide facilities for all levels of users along Highway 64 (State Route 15). Highway 64 connects Sand Park Beach on the east side of the city to Pleasant Run Creek on the west side. Both parks provide walking and biking opportunities and will serve as an origin and destination. Understanding that most walking and biking trips are under a half mile for walking and under 3 miles for biking, providing facilities along Highway 64 will be an opportunity for increasing walking and biking trips between the downtown area and the parks.

For the purposes of this plan, the first step was to gather previous studies, plans, and guidelines that have provided recommendations for bicycle and pedestrian facilities along this corridor. Existing characteristics and operations of Highway 64 was collected and evaluated. Public input regarding issues for pedestrians and bicyclists along Highway 64 were gathered with an online survey, virtual meeting and by making paper maps and surveys available for the community at the Town Hall. Using the evaluation of the highway's characteristics and operation, location of the land use along the highway, and public input, recommendations for pedestrian and bicycle facilities were prepared. The draft recommendations were presented to stakeholders and the community to obtain feedback. Once the recommendations have been finalized, a plan for implementation is needed which begins by identifying possible funding sources.

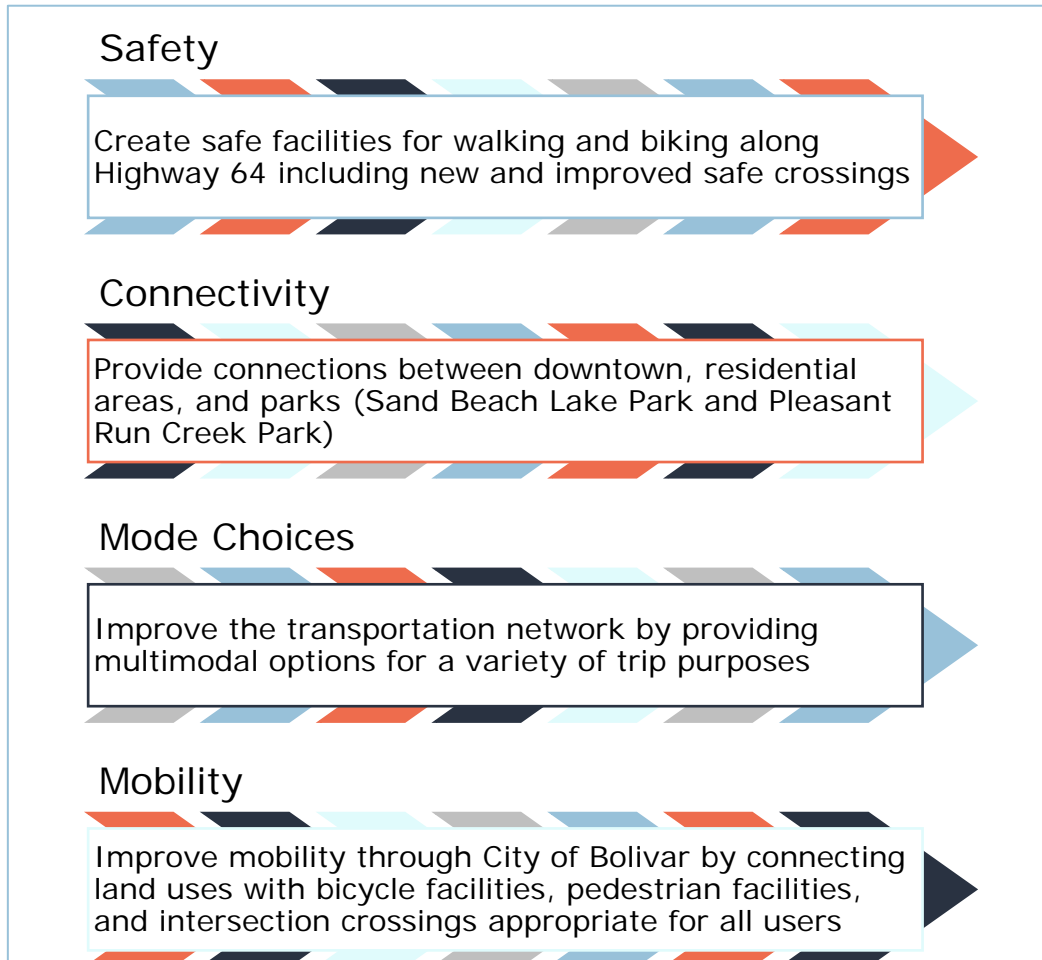


*Highway 64 (SR-15) looking Northwest*



## II. Goals & Objectives

The goal of every study is to create an implementable plan for future growth of the network. Through coordination with the Leadership Committee, reviewing the purpose of this study, and using the community response to surveys, the following goals and objectives were formed:



These goals and objectives guided the development of the Highway 64 Bicycle and Pedestrian Plan. The plan addresses safety of crossings for pedestrians and bicyclists in a manner that creates clear sight for conflict points between users. Connecting parks to downtown and residential areas that are served by the highway is an important priority for the community that this plan will address. A transportation network is intended to provide facilities for all modes including walking and biking. This helps portions of the community that may not have vehicles; improves health in areas of the city by providing safe facilities where access to the roadways for walking and biking is limited due to vehicular speeds, limited pavement, and lack of facilities; and helps those who lack the ability to drive with an alternative mode. Providing trip choices, improves overall mobility along the corridor that serves as one of the main corridors through Bolivar.



### III. Characteristics and Operation of Highway 64

In order to determine appropriate bicycle and pedestrian facilities, a complete inventory of the corridor characteristics and operation is required. Three areas were inventoried and evaluated including roadway geometry and operation, land use, and safety data. The roadway geometry and operation information gathered included the number of lanes, width of pavement, type of roadside drainage, availability of sidewalks, buffer areas, and bicycle facilities present. Locating the land uses that generate walking and biking trips is part of the evaluation process. Parks, schools, and the downtown area were identified as generators for walking and biking trips. To create a safe system for pedestrians and bicyclists, crash history is useful for identifying issues with pedestrians and bicyclists along the corridor. The crashes that occurred between 2018-2020 were used to identify the safety issues along with inventory of the facilities provided at intersection crossings. This information was used to identify needed modifications to facilities along the corridor to encourage walkers and bicyclists of all abilities.

#### CORRIDOR GEOMETRY AND OPERATION

##### *Geometry*

As shown in **Map 1**, the cross section and characteristics of the corridor change several times travelling from east to west through Bolivar. Starting at the eastern city limits and travelling to Water Street, Highway 64 has a posted speed limit of 40 mph and provides two total lanes of travel with one in each direction. There is a ditch on both sides of the roadway and no sidewalks or designated bicycle facilities.



*Highway 64 (SR-15)  
between Margin St. and 3<sup>rd</sup> St.*

In the downtown area, west of Water Street, there is on-street parking available. With a posted speed limit of 30 mph. In this segment, there are two lanes of travel for through traffic with left turn lanes available at the intersections and a two way center left turn available from Washington Street to Jones Street. This portion of Highway 64 has curb and gutter, 8-foot sidewalks with 5-foot buffer areas, and no designated bicycle facilities.



*Highway 64 (SR-15) between  
Washington St. and Tennessee St.*

West of Jones Street the number of lanes varies in this segment. Travelling westbound there are two through lanes and travelling eastbound there is one through lane between Madison Street and Jones Street with a right turn lane. West of Madison Street there are two eastbound through lanes. A two-way left turn lane serves vehicles between Jones Street and Tennessee Street.



This segment of Highway 64 has a posted speed limit of 30 mph with curb and gutter, four-foot sidewalk and a buffer area that varies in width.

West of Tennessee Street on Highway 64, the total number of lanes is four with two through lanes in each direction and a posted speed limit of 40 mph. There is curb and gutter on both sides of the road with a sidewalk located at the back of the curb. A signed bike route begins west of Tennessee Street.



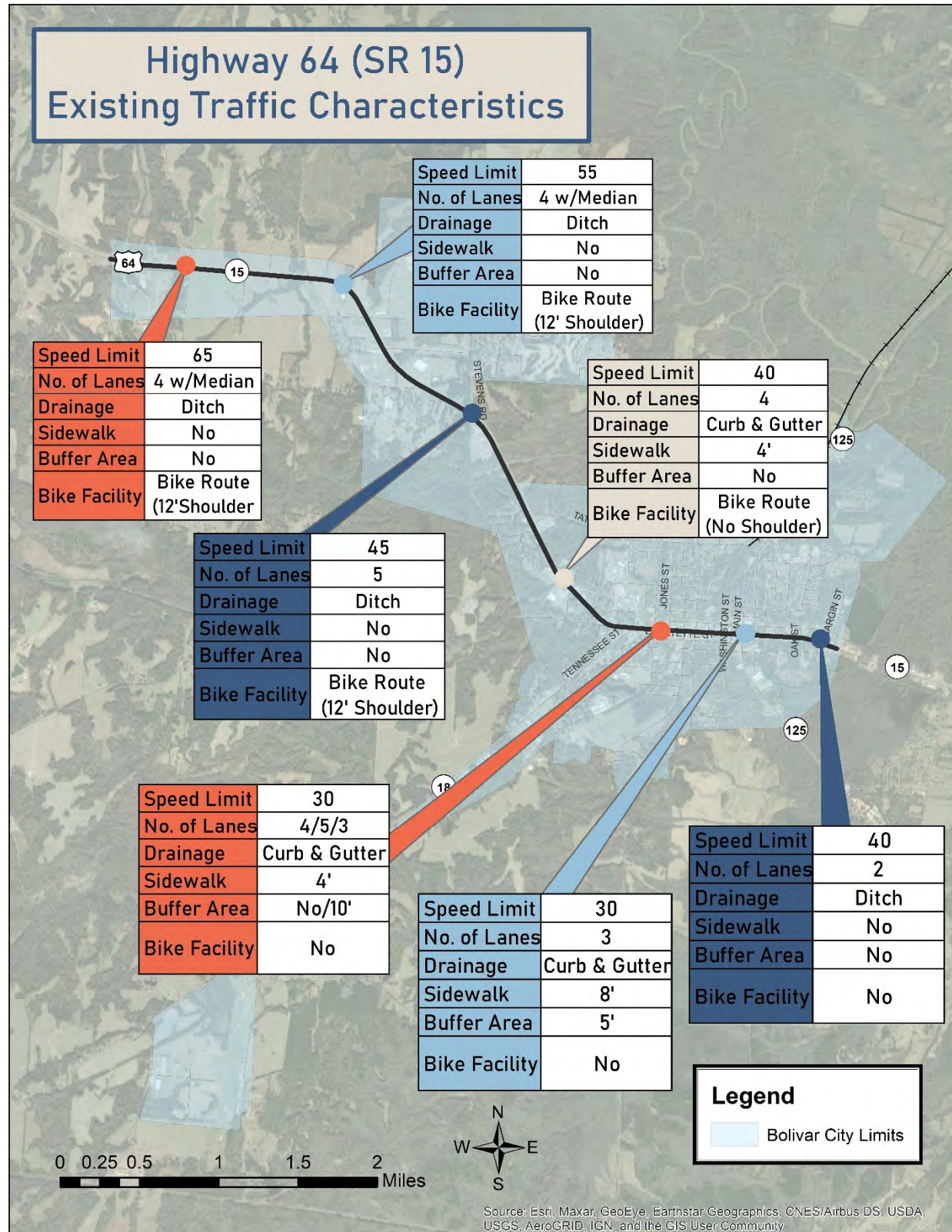
*Highway 64 (SR-15) between Tennessee St. and Tate St.*

Continuing west, a five-lane cross section with approximately 12-foot shoulders and ditches on both sides is provided on Highway 64 west of Tate Road. There are two travel lanes in each direction and a two-way center left turn lane. The posted speed limit is 45 mph. The signed bike route continues through this segment of the corridor and sidewalks are not provided.



*Highway 64 (SR-15) between Tate St. and Stevens Rd.*

At the intersection of Old Highway 64 and the Wal-Mart entrance, Highway 64 becomes four lanes with a median providing two travel lanes in each direction. On both sides of the road there are 12-foot outside shoulders with ditches. The signed bike route continues through this segment of the corridor but there are no sidewalks present. The posted speed limit is 55 mph until east of Hammon Road where it becomes 65 mph.



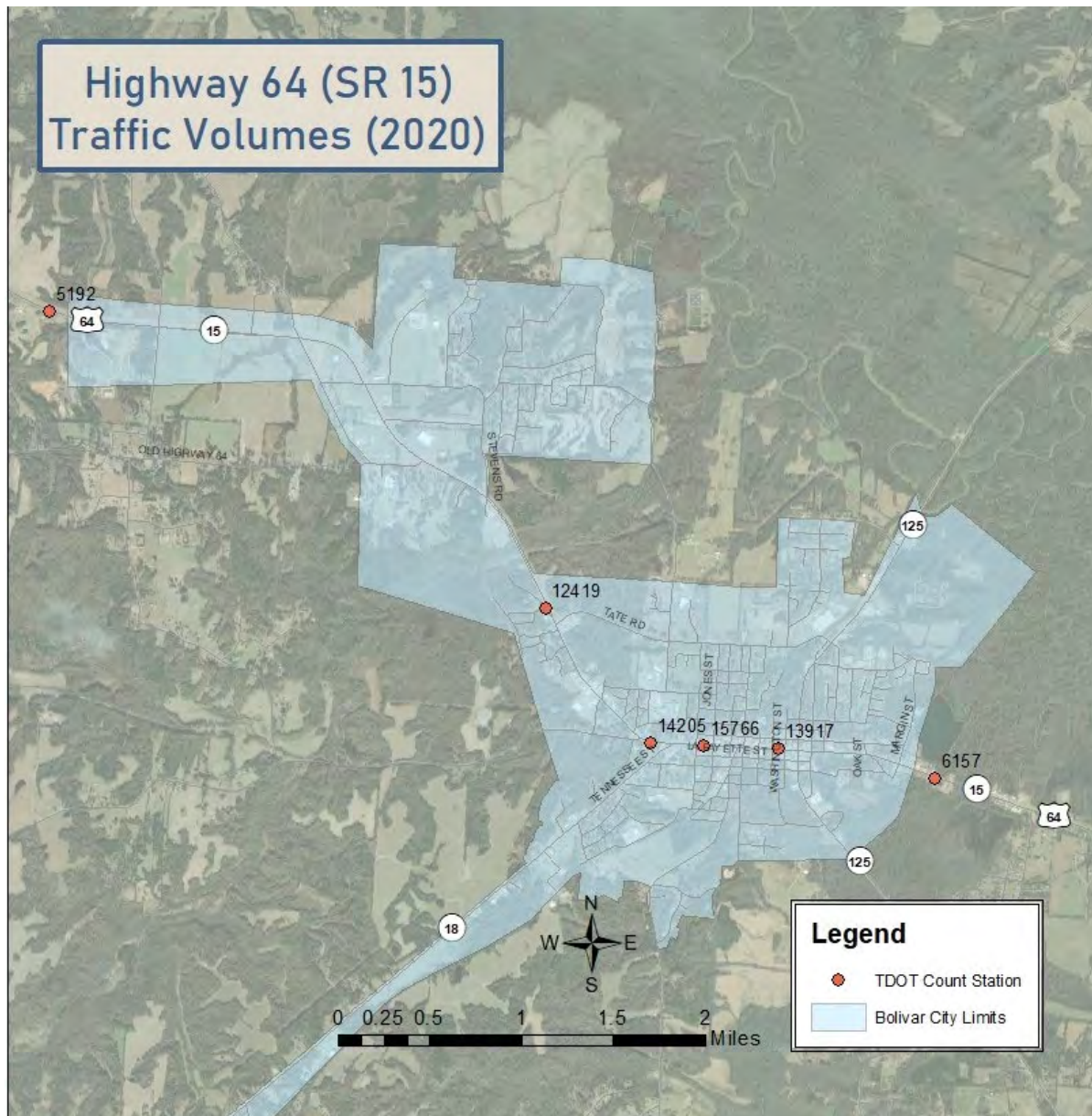
Map 1. Existing Roadway Characteristics



Operation

The operation of Highway 64 has a direct correlation to the environment created for pedestrians and bicyclists. Traffic volumes along the corridor are collected in several locations by Tennessee Department of Transportation (TDOT) and reported as Average Daily Traffic (ADT). The ADT is the number of vehicles, both passenger automobiles and trucks, that travel through the count location in a typical 24-hour period. As shown in **Map 2**, there are six TDOT count locations within and near the city limits of Bolivar.

In 2020 the four traffic count locations within the city limits of Bolivar range from 12,419 to 15,766 vehicular trips per day. As expected, the higher trip count is



Map 2. Traffic Volumes (2020) on Highway 64





experienced where development is denser. The two count locations just outside the city limits are 5,192 vehicular trips per day just west of the city limits and 6,157 just east of the city limits.

Analysis was conducted to determine how the different segments of the corridor operate through the City of Bolivar. This analysis results in a Level of Service (LOS) which represents the functionality based on maneuverability, delays, and speed of vehicles. The characteristics that influence the LOS for a roadway segment include traveling speed, number of travel lanes, capacity of roadway, number of access points, lane widths, and amount of delay experienced. The LOS results in a value denoted as A through F with A being the best and F the worst. Typically, a LOS A through D is considered acceptable operation and LOS E or F are considered unacceptable and need improvements. For two lane roadways, the evaluation is determined based on the traffic volumes and the length and number of passing areas. Since the possibility of passing vehicles on a two-lane highway decrease as volumes and the number of accesses increase, the operational mobility of this type of roadway will deteriorate at relatively low traffic volumes. For four lane roadways the segment analysis relies on capacity, traffic volumes, and the number of access locations. This indicates how freely the motorist can maneuver in traffic. The results of this analysis are included in **Appendix A** and summarized in **Table 1**. For the four-lane cross sections analyzed, there is an LOS shown for each direction in **Table 1**.

Based on the analysis, the operation of the corridor is acceptable for vehicular travel accept in the downtown area. However, in an area where there are a high number of access locations and traffic signals, intersection analysis serves as a better indication of the overall level of operation. For a bicycle and pedestrian plan, vehicular operation does not always indicate a safe environment for walkers and bicyclists. It is appropriate to use this analysis when creating the recommendations to help guide appropriate locations for safe crossings.

**Table 1.** LOS on Highway 64

TDOT Station No. (Location)	ADT (2020)	LOS
23 (S. of Tate Rd.)	12,419	A/A
27 (E. of Margin St.)	6,157	D
70 (Bt Calhoun St & Lauderdale St.)	13,917	E
71 (Bt Madison St. & Jones St.)	15,766	A/A
103 (W. of Tennessee St (SR-18))	14,205	A/A
109 (W. of City Limits)	5,192	A/A



## LAND USE

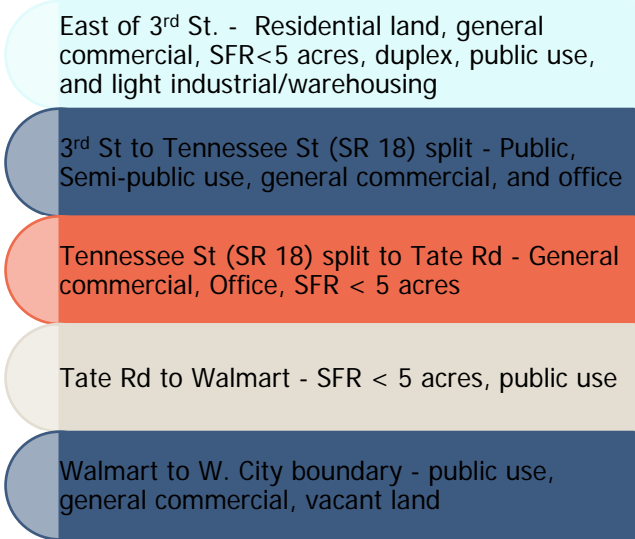
Every vehicular trip begins and ends with walking. For the purposes of this bicycle and pedestrian plan, the land uses located in the City of Bolivar are those that generate walking and biking trips such as parks, schools, and the downtown area with public buildings, restaurants, and retail. In addition, identifying residential areas where many trips originate in relation to the other generators and attractors will help when determining appropriate bicycle and pedestrian facilities.

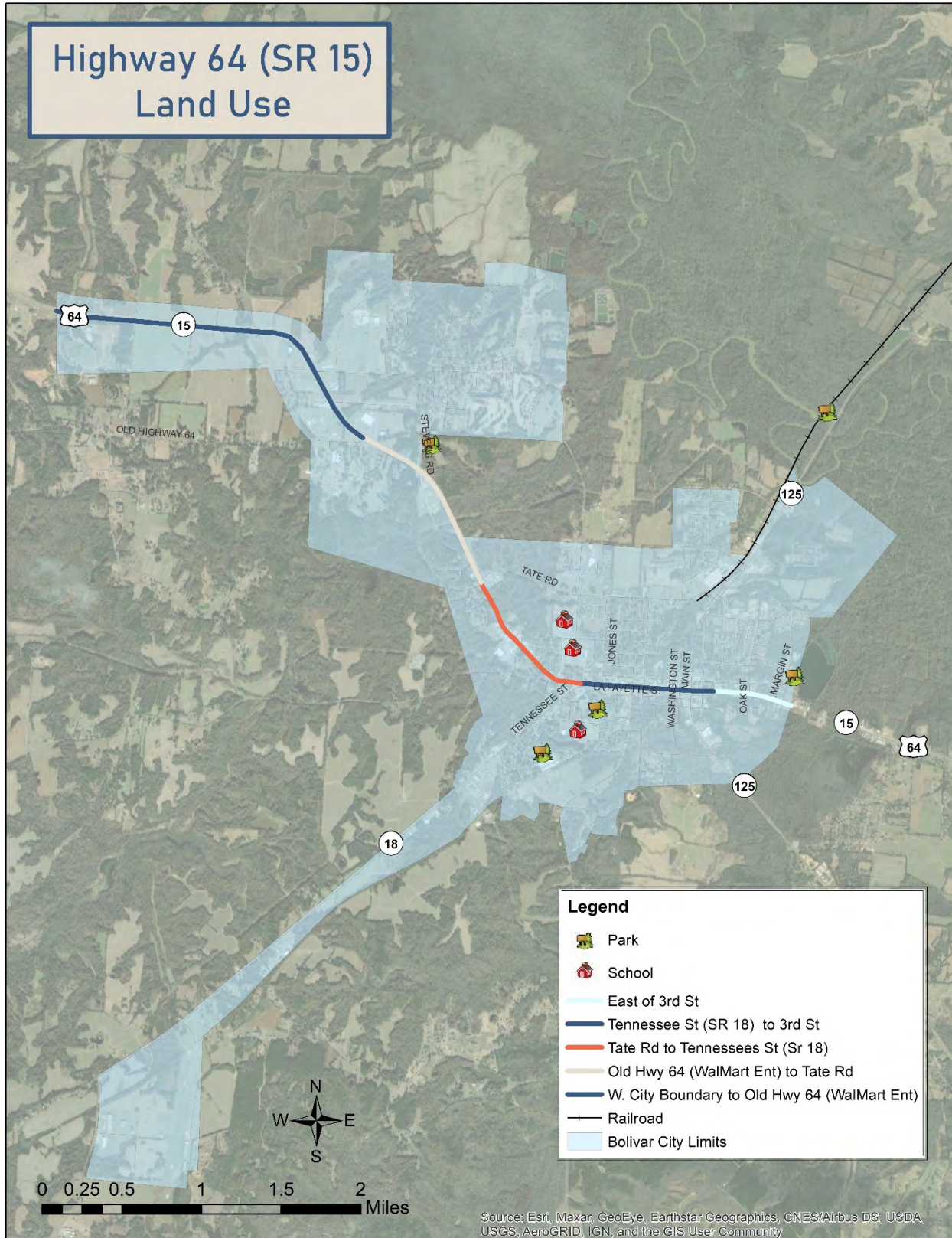
**Map 3** with the graphic to the right together depict the land use served along Highway 64 based on the roadway characteristic areas explained in the previous section.

From the eastern city limit to 3<sup>rd</sup> Street, the uses served include general commercial, single family residential with less than 5 acres, duplexes, public use, and light industrial/warehousing.

In the downtown area of Bolivar, between 3<sup>rd</sup> Street and Tennessee Street the uses include public, semi-public, general commercial, and office uses. General commercial, office, and single family residential less than 5 acres are the land uses found along the corridor between Tennessee Street (SR-18) and Tate Road. The development between Tate Road and the Wal-Mart Entrance/Old Highway 64 is sparse with mostly single family residential less than 5 acres and some public use. On the western side of the corridor between the Wal-Mart entrance/Old Highway 64 and the city limits there is a lot of vacant land but a few developments consisting of public use and general commercial uses.

The parks and schools in the area are also shown on **Map 3**. Bolivar hosts six parks and supports three public schools, one elementary, one middle, and one high school. Facilities for walkers and bikers on Highway 64 will provide an important connection to three of the parks.





Map 3. Land Use on Highway 64



Sand Beach Park is located on Margin Street and Highway 64 on the eastern side of Bolivar. This new park is currently open for fishing, canoeing, kayaking, small boats and walking trails. Other amenities planned for the 122-acre park include restroom facilities, amphitheater, BBQ grills and pavilion, fenced playground, zipline, swimming beach, and beach volleyball. This type of park area is expected to attract walking and biking trips from throughout the City.



*Walking Trail at Sand Beach Park*



*Beach area at Sand Beach Park*



*Sand Beach Park Lake*



Bolivar also has Pleasant Run Creek Park on Stevens Road just north of Highway 64. This park contains greenspace, an arboretum, disc golf course, dog park, and fishing in a stocked lake. There are also trails for walking and running plus areas for picnics. These amenities attract many walkers and runners from the community.



Directly across from Stevens Road on Highway 64 is West Park which contains three ball fields and a playground. Providing a connection between Pleasant Run Creek and the ball fields is important for promoting walking and biking in the area.



*Walking Trail and Fishing at Pleasant Run Creek Park*



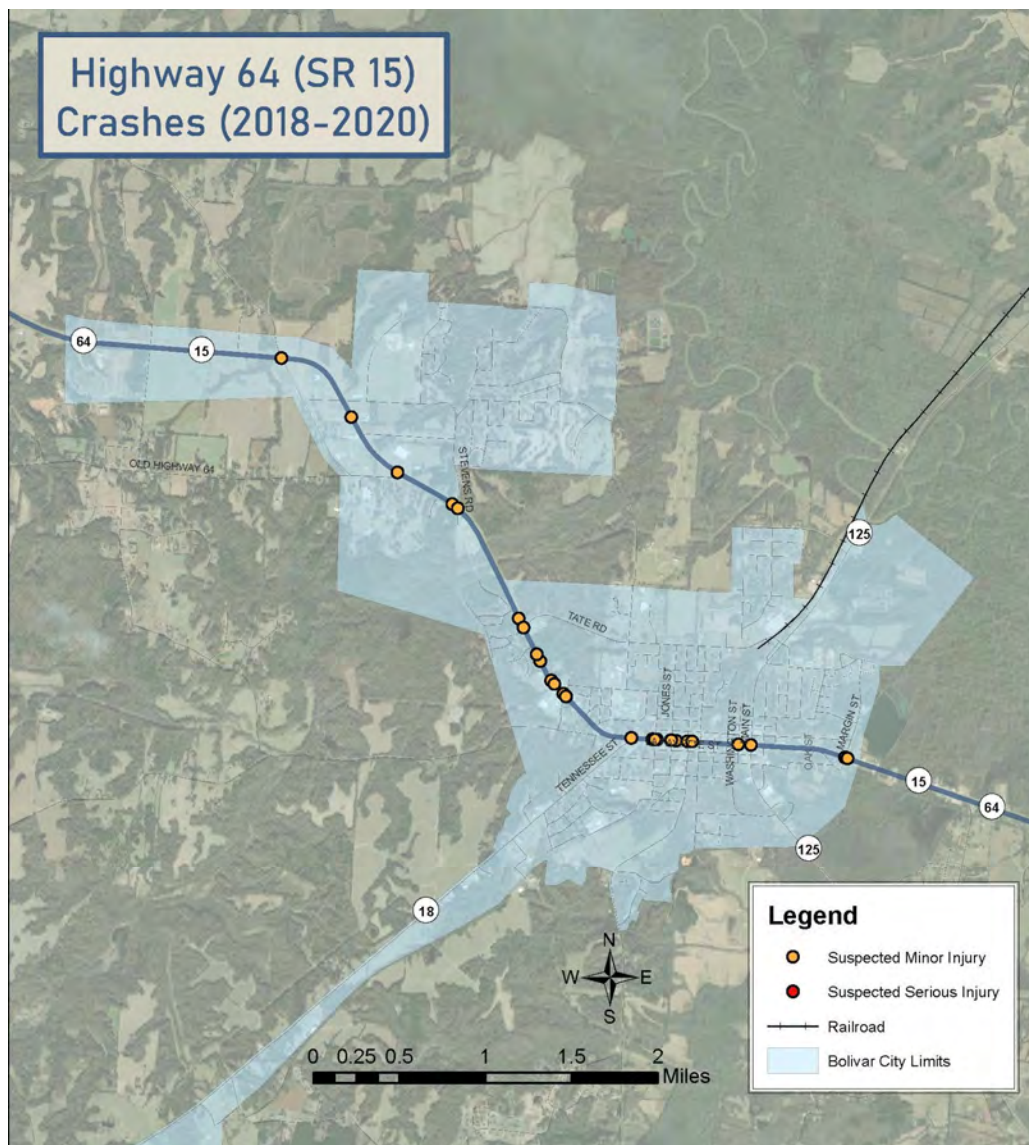
*West Park Ball Fields and Playground*



## SAFETY

Safety for pedestrians and bicyclists is an important part of proper facility planning. Evaluating the existing safety on the corridor was done by analyzing crashes along the corridor and collecting intersection crossing characteristics.

Between 2018-2020 there were 179 crashes along the corridor within the city limits of Bolivar. There were 136 that resulted in property damage only and 42 that resulted with a suspected minor injury and one with a suspected serious injury. Of the crashes on this roadway segment 117 occurred at an intersection. The manner of collision consisted of 49 rear-ends, 26 angle and 23 sideswipes. The remaining 19 crashes at the intersections were either no collision with vehicle or classified as other. Based on the information obtained from TDOT, there were no fatal crashes during this time period and no crashes involving pedestrians or bicyclists.



Map 4. Highway 64 Crashes (2018-2020)



### *Pedestrian Crossings*

Along the Highway 64 corridor there are four signalized intersections, three unsignalized pedestrian crossings in the downtown area, and two unsignalized intersections where non-motorized crossings are desired. The four signalized intersections are Main Street, Jones Street, Tennessee Street (SR-18), and Wal-Mart entrance/Old Highway 64.

#### *Highway 64 at Main Street*

The intersection of Highway 64 at Main Street provides crosswalks on all four legs of the intersection with accessible ramps that have mats with truncated domes. The crossings have pedestrian signals with pushbuttons. Some of the pedestrian signal heads are not properly aligned for visibility by the crossing walkers. The pushbuttons are the smaller diameter buttons and do not all function properly.



*Crosswalk on North Leg*

#### *Highway 64 at Jones Street*

Highway 64 at Jones Street provides pedestrian crosswalks on all four legs with ramps, pedestrian signals and pushbuttons. The mats with truncated domes are missing and the ramps are not all constructed to meet the American with Disabilities Act (ADA) standards. The pushbuttons are the smaller diameter buttons and do not all function properly.

#### *Highway 64 at Tennessee Street (SR-18)*

The intersection of Highway 64 and Tennessee Street (SR-18) provides crosswalks on the east leg and south leg of the intersection as well as through the channelized right turn on the south leg. Pedestrian signal heads and pushbuttons are not provided at this intersection. Ramps are provided on all the crossings but are missing the mats with truncated domes.



*Northbound approach on Tennessee St (SR-18)*



### *Highway 64 at Wal-Mart entrance/Old Highway 64*

Pedestrian crossings are not necessary at all signalized intersections if it is located in an area where pedestrians are not expected. At the intersection of Highway 64 and Wal-Mart entrance/Old Highway 64 there are no pedestrian facilities provided.

The three unsignalized intersections in the downtown area are located at S. Water Street, S. Washington Street, and a midblock crossing between S. Water Street and S. Main Street.

### *Highway 64 at S. Water Street*

There are three crosswalks provided at the intersection of Highway 64 and S. Water Street on the north, south, and west legs. The speed limit on Highway 64 through this intersection is 30 mph and there is adequate sight distance in both directions for pedestrians at this crossing. There are stop signs for both approaches on S. Water Street with Highway 64 not having stop control.



*West Leg Crosswalk*

### *Highway 64 at S. Washington Street*

Highway 64 at S. Washington Street provides one marked crosswalk on the east side of the intersection. There are ramps with mats and truncated domes on both sides of the crosswalk. The speed limit is 30 mph on this segment of roadway and there is adequate sight distance looking west, however, there is on-street parking on both sides of Highway 64 on the east leg that limits the view of pedestrians on the corner for drivers.

### *Midblock Crossing between S. Water Street and S. Main Street*

With the post office on the south side of the corridor and the courthouse on the north side, a marked mid-block cross walk is provided for pedestrian connectivity. The posted speed limit is 30 mph and there is adequate sight distance for pedestrians to see on-coming traffic. On the north side there is a bulb-out so the pedestrians are visible to drivers. In addition, a “yield to pedestrians” sign is mounted on the solid double yellow line in the middle of the Highway 64.



*Mid-block Crosswalk*





The two intersections where unsignalized crossings are desired, according to the Leadership Committee and community input, are at E. Margin Street near Sand Beach Park and at Stevens Road to connect West Park with Pleasant Run Creek Park.

*Highway 64 at E. Margin Street*

The intersection of Highway 64 at E. Margin Street is controlled by a two-way stop located on the E. Margin Street approaches. The posted speed limit on Highway 64 in this area is 40 mph which impacts the safety for an at-grade crossing. Both sides of the road are relatively flat and there is adequate sight distance for pedestrians and vehicles to be visible. There is a ditch on the north side of the road and grates for drainage on the south side of the road. The Sand Beach Park access on Highway 64 is approximately 350' east of the intersection.



*East of E. Margin Street looking West*

*Highway 64 at Stevens Road*

The intersection of Highway 64 at Stevens Road has West Park on the southeast corner and access to Pleasant Run Creek Park is located approximately 900' north of the intersection. Highway 64 at this location has a five-lane cross section with 12-foot outside shoulders; Stevens Road is stop controlled. Although there is adequate sight distance in both directions on Highway 64, the posted speed limit of 45 mph with this cross section is not considered safe for an at-grade pedestrian crossing.



*Stevens Road looking south*



*Highway 64 looking west*



*West Park access looking*



## IV. Current Plans & Studies

To gain an understanding of bicycle and pedestrian planning in the City of Bolivar, a review of existing plans and studies was performed. Recommendations from the plans for bicycle and pedestrian facilities along Highway 64 were collected.

### *BOLIVAR DOWNTOWN MASTER PLAN (2007)*

TDOT worked with the City of Bolivar to create a Downtown Master Plan (2007) that outlined a long-term strategy for Bolivar to redevelop downtown and prepare for growth by integrating land use and transportation.

The special initiatives presented to achieve the plans goals include:

- Invest in parks, sidewalks, lighting, landscaping, crosswalks, etc.
- Make connections to natural/recreational activity areas by means of trails for hiking/biking and boating and canoe launches
- Plan ahead for development, establishing a minimum standard of design through form-based development codes, design guidelines, and proactive development

This plan discusses the desire to orient the downtown to pedestrians. A map presented the 5 and 10 minute walking areas around the Court House and the plan discussed the connection Highway 64 (SR-15) has through the historic part of the city. As presented in the plan, the city lacks unified sidewalk patterns; the sidewalks are discontinuous, broken or completely missing; there is a lack of street furniture; cars are parked on sidewalks in some locations due to a lack of on-street parking and parking areas; and sidewalks in the historic district are deteriorating. Continuous asphalt paving from parking lots to streets are present in many locations creating a poor environment for pedestrians.

Some of the basic principles this plan hopes to incorporate include:

- Create a clearly defined urban network comprised of compact walkable streets, a regional trail system, and street improvements that connect the existing Courthouse Square with businesses along Market Street
- Create public/civic space network composed of new public squares, plazas and trails, recreational areas, preserved wetlands and natural interconnected corridors
- Connect the downtown public spaces to the surrounding river and other natural areas by trails and improved streets

The plan proposes a greenway trail to be located on the former railroad right-of-way, crossing Highway 64. The streetscape improvements for Highway 64 are designed to encourage pedestrians by providing a safe environment where vehicles will travel at slower speeds. There is also a proposed central landscaped median from Jones Street to Washington Street. The on-street angled parking in the downtown area will be preserved to serve the businesses and customers in the area.



Several initiatives in the Master Plan listed below will serve to improve the walking and biking environment.

- ❖ Encourage pedestrian activity by improving the streetscape with pedestrian scale lighting, street trees for shade, relocating utility lines, repairing or replacing sidewalks, adding furniture, providing protection from the elements with awnings, and adopt signage regulations to enhance the visual realm. Expand streetscape improvements to surrounding blocks in later phases.
- ❖ Construct medians, curb & gutters along Market Street to delineate and control vehicular movements.
- ❖ Introduce bicycle routes to encourage alternative transportation and recreational activity.
- ❖ Construct sidewalks separated from the street by planting strips to encourage pedestrian activity.
- ❖ Add pedestrian scale lighting to enhance safety and security.
- ❖ Create a strong “sense of arrival” to Downtown with appropriate signage, lighting, landscaping, and street improvements.
- ❖ Improve streetscapes and access to the river starting at the Square and Market Street
- ❖ Reconnect to the river through a new linear greenway. Locate pedestrian and bicycle trails along the greenway.
- ❖ Study future traffic and parking demands; sensitively locate parking; structures for redevelopment of surface parking fields; coordinate traffic signals; and encourage use of bicycles.
- ❖ Encourage parking in rear of building with buildings placed adjacent to the street.
- ❖ Require new construction to adhere to design guidelines that promote walking and biking
- ❖ Provide sidewalk furniture to encourage pedestrian activity.
- ❖ Look for opportunities for trails and other links to Hatchie River

Highway 64 is currently designed for vehicular traffic and creates a challenge to slow traffic through downtown due to lane width. There are few trees and inadequate sidewalks that disappear into large parking areas with no landscaping. In addition, there are unclear or no crosswalk markings at corners, and missing ADA ramps for wheelchairs and strollers.

Some of the general recommendations from the plan are summarized in categories bicycle and pedestrian categories in the table below.



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*General Recommendations from Bolivar Downtown Master Plan*

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**Sidewalks** – Provide pedestrian ramps at street corner sidewalk crossings for strollers, walkers, and wheelchairs; Repair broken sidewalks; Introduce textured paving in certain locations; large street transitions (slopes) should be addressed with steps at regular intervals.

**Crosswalks** – Clearly mark crosswalks at street corners or in the middle of the road with textured paving or contrasting color; Appropriate pedestrian signage and lighting should be included

**Street Width** – Main Street is excessively wide with 80' widths Face of Curb (FOC) to FOC in places; around square should use standard 11' lane widths to try to slow traffic and provide "traffic calming"

**Bump-outs** – Use bump-outs to help with traffic calming, slow turning vehicles, and provide refuge area for strollers and wheelchairs outside sidewalk travel zone; provide bump outs in heavy pedestrian areas around courthouse

**Traffic Calming** – Introduce raised mid-block crossings clearly marked for pedestrian crossings

**Drain inlets** – Remove inlets from pedestrian crossings and cyclist traffic areas to concealed locations within face of curb and use bicycle friendly grates

**On-street parking** – stripe angled on-street parking at 60 degrees

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The more specific improvements included the plan are listed below:

- Sidewalks widened to 6' with ADA ramps and crosswalks at intersections;
- After Highway 64 Bypass construction, construct a median on Highway 64;
- As properties redevelop increase sidewalk width to 12';
- To reduce pedestrian-vehicular conflicts, curb cuts should be limited and relocated to rear or side streets where possible to provide access to central parking areas to limit conflicts with pedestrian traffic;
- Encourage on-street and shared parking along corridor and among neighboring landowners;
- Provide bump-outs at corners to minimize pedestrian crossing distances;
- Encourage street trees, pedestrian scale street lighting, way-finding signage, and street furniture;

To promote walking and biking, the plan also included Action Items for the design process, streetscape improvements, development opportunities, and activities and events.



### *Action Items from Bolivar Downtown Master Plan*

#### Design Process

- Study future traffic & parking demands; coordinate signal timings to assist in proper pedestrian/vehicular balance;
- Identify locations for future parking garages and lot locations;

#### Streetscape Improvements

- Identify and secure funding for streetscape improvements;
- Survey Downtown and Market Street sidewalks, curbs, lighting and utilities;
- Design streetscape standards and select specified materials hardscape elements (sidewalks, ramps, crosswalks); light fixtures; street trees and planters; street furniture (benches, trash receptacles, bicycle racks, water fountains); parking meters; traffic signals; wayfinding and street signage;

#### Development Opportunities

- Sensitively locate surface parking lots to allow for redevelopment in the future as parking structures

#### Activities and Events

- Encourage use of alternate transportation to serve downtown during peak events

### ***HARDEMAN COUNTY PARKS & RECREATION PLAN (2018-2028)***

The parks in the City of Bolivar are a great asset to the community providing space for outdoor activities and gatherings. The Hardeman County Parks and Recreation Plan was prepared to determine need for future outdoor areas that will enhance the facilities available for the county. One of the recommendations included providing a 10-foot side multi-use asphalt trail along the abandoned railroad track from City Park in southwest Bolivar through the downtown area up to the Hatchie River Nature Center.

### ***ZONING ORDINANCE – BOLIVAR, TN (Readopted June 2002, Updated October 2020)***

The zoning ordinance includes guidance for parking areas, street cross sections, sight distance needed at intersections, and access control requirements which all affect the environment for pedestrians and bicyclists. The specific ordinances that provide guidance for these items during development include 10-210 Off-street Automobile Storage, 10-211 Intersection Sight Distance, and 10-213 Access Control.

### ***BOLIVAR SUBDIVISION REGULATIONS (Readopted June 2002, Updated October 2020)***

The City of Bolivar Subdivision Regulations were updated in October 2020. A few items that affect the walking and biking environment and will guide our recommendations are the street widths, access restrictions, and ramps providing access for everyone. The right-of-way width requirements are based on the roadway classifications where arterial streets are 80-150 feet, collector streets are 60 feet, and residential streets are 50 feet. There are some access restrictions that require



subdivisions that abut an existing or proposed major street to provide adequate protection of residential properties to separate the through and local traffic which helps create a better environment for pedestrians and bicyclists. Where sidewalks, or curbs & gutters are required, the developer is required to install ramps at all crosswalks to make the transition from street to sidewalk easily negotiable for all users including wheelchairs and strollers.

## V. Public Participation

Bicycle and pedestrian plans that are successful involve public outreach where the community has an opportunity to voice concerns and the team can gather community input for future vision. The unique circumstances of the last year required public outreach that involved both virtual and in-person opportunities. The public outreach process involved on-line surveys, virtual meetings, and opportunities for in-person participation. To do this, our team prepared two on-line surveys for public response, first at the beginning of the project and then after the recommendations were prepared. A virtual public meeting was conducted to introduce the project to the public and give them an additional opportunity to ask questions and provide feedback. In addition, for those that do not have access to a computer, paper copies of the survey with information on the project were provided at the City of Bolivar City Hall. Once the recommendations were prepared, maps with a list of recommendations were displayed and paper copies were available at the city hall for those that wanted to provide input in person.

The results of the initial survey are included in **Appendix B**. There were 78 people who completed the survey. It provided information regarding the reason people walk and bike in the area, how often they walk and/or bike, obstacles to walking and biking, and the types of improvements they want to see to encourage walking and biking.



We used this information along with the existing characteristics of the network and existing operation to prepare recommendations that will support the goals and objectives of the study and encourage walking and biking in the community. The recommendations were presented to the Leadership Committee and the public to gather additional thoughts regarding how to improve the walking and biking environment. Revisions were made to the recommendations based on the additional feedback provided.



## VI. FUTURE PEDESTRIAN AND BICYCLE FACILITIES

There are several approaches to evaluate the transportation network for determination of adequate and needed pedestrian and bicycle facilities. Some methods result in a level of service for walkers or bicyclists and others result in a comfort level for users. Regardless of the terminology, the analysis or evaluation consists of gathering characteristics of the network such as speed limit, width of lane and shoulders, presence of buffer area or planting strip, presence of separated walking and biking facilities, presence of on-street parking, amount of traffic, number of accesses, and location of land use. Using this information provides results that indicate the need for the facility as well as the appropriate facility for creating an environment to encourage walking and biking.

Determining where walking and biking facilities will be utilized is influenced heavily by the location of land uses. Pedestrian and bicycling trips are more likely to occur where residential uses are located within a half mile to a mile of retail, parks, schools, and restaurants. Also, the walking and biking trips are more likely to occur if safe, comfortable, friendly pedestrian and bicycling facilities are provided. If the uses along a corridor are not conducive to encouraging pedestrian and bicycle trips for transportation purposes, there are still benefits to the community to provide proper facilities for recreational purposes. The health benefits experienced by the communities that provide recreational facilities for walking and biking include a friendlier community atmosphere, preservation of open space, and more opportunities for physical activity.



*Complete Street with Sidewalks, Bike Lanes, & On-street Parking*

Based on the land use map presented previously, providing pedestrian and bicycle facilities that connect the uses along Highway 64 will add to the mobility and enhanced sense of community for the City of Bolivar. Facilities that connect the parks within the city to the downtown area in the City of Bolivar will provide opportunity for economic growth.



## TYPES OF FUTURE PEDESTRIAN AND BICYCLE FACILITIES

There are various types of pedestrian and bicycle facilities appropriate along roadways. When the land use and roadway characteristics change, the design of bicycle and pedestrian facilities will often change. The various types of facilities that may apply to the Highway 64 (SR-15) Bicycle and Pedestrian Plan are briefly described in the following.

*Sidewalks* are the most common pedestrian facility. They are typically made of concrete and run parallel to the roadway often times at the back of the curb without a buffer between the travel lane and sidewalk. However, for pedestrian comfort it is desirable to provide a minimum 2-foot buffer between the edge of travel lane and sidewalk. These facilities are dedicated space for pedestrians.



*Signed Bicycle Routes* are provided on the road within the travel lanes and dedicated with signs and sometimes striping. Often, they are provided on a shoulder with signage that indicates to the vehicles that bicyclists may be using the same pavement. Like bike lanes, a benefit of bike routes is that they are usually provided on existing pavement and only require signing and, if desired, pavement markings.

A *sidepath* is similar to a multi-use path or greenway but is typically located immediately adjacent to and parallel to a roadway in a rural area where the number of pedestrians and bicyclists is typically lower. In heavy traffic and high-speed environments, these facilities provide a separation from traffic allowing bicyclists and pedestrians of all abilities to feel comfortable on a shared facility. They are typically constructed of crushed, fine stone, compact sand, or asphalt and can be as narrow as five feet wide. These facilities help areas maintain their rural and agricultural







character with buffer areas consisting of vegetation that separate the roadway and sidepath. They are sometimes used as regional arterial links to local biking and walking facilities.

*Multi-use paths* are often constructed in park areas or undeveloped land providing a paved path for various modes of use, all age groups and all user abilities. These typically add great value to the community by providing connectivity for walkers, bikers, skaters, runners, and hikers, gathering space for families and friends and a location for various community outdoor activities. The paths are typically 10-feet wide and follow an alignment provided by the surrounding environment.





## VII. Recommendations

The purpose of these recommendations is to create a more friendly environment for walkers and bicyclists along Highway 64 and connect Sand Beach Park to downtown and to Pleasant Creek Run Park as well as provide crossings to connect the north and south sides of the corridor. The recommendations were based on the current environment created by the transportation system, location of walking and biking generators, and creating safe facilities. The recommendations are intended to create a unique, friendly environment for walkers and bicyclists along the corridor while also considering the financial abilities of the city. Due to the physical or financial limitations of the recommendations along the Highway 64 corridor, in some locations alternative corridors were evaluated for appropriate facilities. The intention of the project list is to guide the city towards providing a safe, connected bicycle and pedestrian network for all users. During the design phase, the facilities design will be determined, such as signing, pavement markings, required widths, materials and signalization.

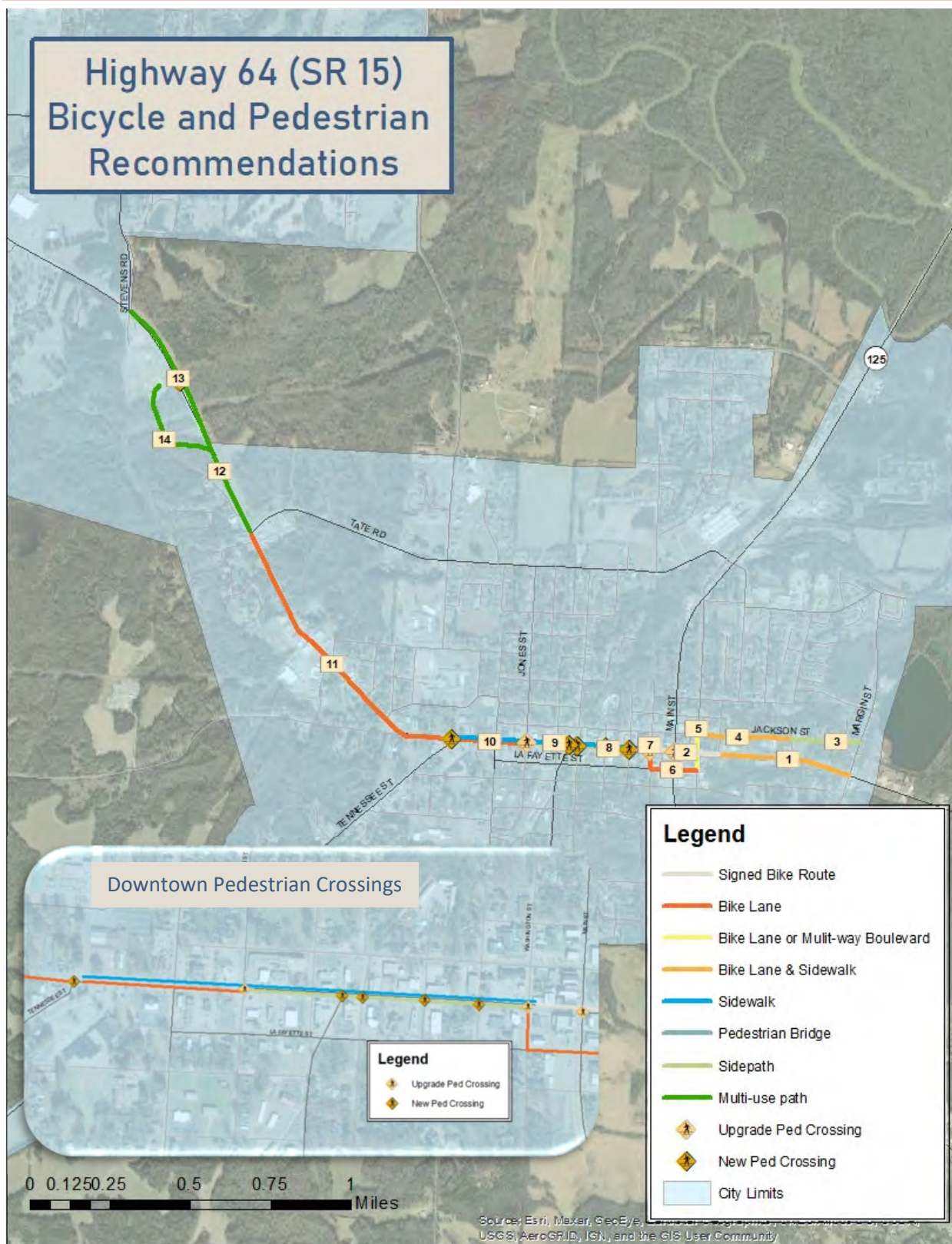
**Table 2** and **Map 5** depict the bicycle and pedestrian recommendations for Highway 64 bicycle and pedestrian facilities and crossings as well as some possible alternative locations for facilities.

**Table 2.** Bicycle and Pedestrian Facility Recommendations

Project No.	Type of Facility	Location	Description
1	Bike Lane & Sidewalk	Hwy 64 from Margin St to 3rd St	Opt. 1: Install Bike Lane on both sides, Sidewalk on East side with buffer and curb & gutter drainage Opt. 2: Install Multi-Use path on north side with buffer and curb & gutter drainage
2	Signed Bike Route	Hwy 64 from 3rd St to Washington St	Signed Bike Route
3	Sidepath	Jackson St from Margin St to Oak St	Install sidepath or Multi-way Boulevard on South side of Jackson St.
4	Bike Lane & Sidewalk	Jackson St from Oak St to Water St	Install Bike Lane on both sides of roadway and widen sidewalk to 5'
5	Bike Lane	Water St from Jackson St to Lafayette St	Install bike lane (move parallel parking away from curb between Bike Lane and travel lane)
6	Bike Lane	Lafayette St from Water St to Washington St	Reconstruct angled to parallel parking on south side and stripe 4' bike lane both sides
7	Bike Lane	Washington St from Lafayette St to Hwy 64	Install bike lane; remove on-street parking on one side and stripe 4' bike lane on both sides
8	Sidewalk	Hwy 64 from Washington St to Tennessee St	Increase width of existing sidewalks to 5' on both sides
9	Sidepath	Hwy 64 from Washington St to Jones St	Construct 5' sidepath parallel to sidewalk with >5' buffer



10	Bike Lane	Hwy 64 from Jones St to Tennessee St	Consider feasibility of Road diet; consider 3 lanes with bike lanes on both directions
11	Bike Lane	Hwy 64 from Tennessee St to Tate Rd	Consider feasibility of Road Diet; consider 3 lanes with bike lanes both directions
12	Multi-use path	Hwy 64 from Tate Rd to Pleasant Run Creek bridge	Construct 10' Multi-use path to bridge on either side of roadway
13	Multi-use path	Hwy 64 from Bridge to Stevens St	Construct 10' Multi-use path from bridge to Stevens Rd
14	Multi-use path	S of Pleasant Run Creek bridge to ballparks	Construct 10' Multi-use path from crossing to Ballparks
15	Pedestrian Crossing	at Washington, Calhoun, Lauderdale, Union, & Polk	Add pedestrian ramps and crosswalk pavement markings for side roads
16	Pedestrian Crossing	Hwy 64 (SR 15) @ Main St	Repair pedestrian signal heads and pushbuttons at intersection, restripe faded crosswalk markings; retime for appropriate pedestrian crossing times
17	Pedestrian Crossing	Hwy 64 (SR 15) @ Jones St	Repair signal heads and pushbuttons at intersection, restripe faded crosswalk markings/retime for appropriate pedestrian crossing times
18	Pedestrian Crossing	Hwy 64 (SR 15) @ Tennessee St	Install Pedestrian signals and pushbuttons; retime signals for appropriate pedestrian crossing times
19	Pedestrian Crossing	Hwy 64 (SR 15) (approximately 1400' S of Stevens Rd)	Install a pedestrian overpass



Map 5. Bicycle and Pedestrian Recommendations



## Project 1

Highway 64 between Margin Street and 3<sup>rd</sup> Street has areas with limited right-of way and will require construction with adequate drainage. In addition, the city cemetery is located on the north side of the corridor east of 3<sup>rd</sup> street and requires special consideration. Due to the constraints, two options are proposed that can be considered during the environmental documentation and design. It is important to note the speed limit on Highway 64 in this segment limits the ability to provide a safe at grade crossing on the corridor. The City of Bolivar should coordinate with TDOT to evaluate the speed limit and determine if it can be lowered in this area. If the speed limit is lowered, during design of the facilities, providing an at-grade crossing with Pedestrian Hybrid Beacons should be evaluated.

Option 1 is to provide bike lanes on both sides of the road, sidewalk on the north side of the roadway with a buffer, and curb and gutter for drainage. Option 2 is to design a 10-foot multi-use path to serve both pedestrians and bicyclists on the north side of the roadway with curb and gutter on both sides. Both options are expected to require realignment of the roadway and right-of-way acquisition. During the design phase the two options can be evaluated to determine the more appropriate facility for this segment of Highway 64.



*Highway 64 (SR-15) looking east  
East of 3<sup>rd</sup> Street*



*Highway 64 (SR-15) looking west  
East of Margin Street*

## Project 2

The section of Highway 64 between 3<sup>rd</sup> Street and Washington Street has adequate sidewalks on both sides of the road but lacks facilities for bicyclists. In addition, this section has on-street parking through the area which the city desires to retain. Due to the limited amount of pavement through this area for bicycles and the frequency of turnover in the on-street parking, a signed bike route notifying vehicles to share the road with bicyclists is the best option. In the future, if the city decides to eliminate the on-street parking, an opportunity for a striped bike lane should be assessed.



*Highway 64 (SR-15) looking west  
Between Water Street and  
Main Street*



### Project 3

Due to the constrained physical and financial obstacles to construct Project 1, this project will serve as an optional project running parallel to Highway 64 on Jackson Street between Margin Street to Oak Street. A sidepath is recommended due to the limited width of pavement and right-of-way on this segment of Jackson Street. This will provide a shared access for both pedestrians and bicyclists.



*Sand Beach Park  
Parking Area at the end of Jackson Street*

### Project 4

Continuing west on Jackson Street as an alternative route to Project 1, this will run between Oak Street and Water Street. The pavement width on Jackson Street widens through this section so it can accommodate a striped bike lane in both directions. In addition, through this segment of the roadway, the sidewalk located on the north side of the road should be widened to 5 feet.

### Project 5

In order to provide a continuous bicycle facility, this project proposes a bike lane on Water Street between Jackson Street and LaFayette Street. In order to maintain the on-street parking between Jackson Street and Highway 64, a striped bike lane is recommended on the inside of the on-street parking next to the curb and shift the striped parking area next to the travel lanes. The travel lanes will be 10-feet wide. For the section between Highway 64 and LaFayette Street, 10-foot travel lanes with a striped 4-foot bike lane is recommended.



### Project 6

Continuing west, this project will provide buffered 6-foot bike lanes on both sides of LaFayette Street between Water Street and Washington Street. The angled parking provided between Water Street and Main Street should be converted to parallel parking located next to the travel lanes and the buffered 6-foot bike lane should be located at the edge of pavement. Between Main Street and Lafayette Street, continue the buffered 6-foot bike lane located at the edge of pavement.

### Project 7

To complete the bike lane connection between downtown and Sand Beach Park as an alternative connection to Projects 1 and 2, provide bike lanes on Washington Street between Lafayette Street and Highway 64. The on-street parking on one side of the road will need to be removed to provide adequate pavement for striped 4-foot bike lanes on both sides of the road.



*Sidewalks on Highway 64 (SR-15)  
East of Lauderdale Street*

### Project 8

In order to provide a friendly environment for walkers, it is proposed to increase the sidewalk width to 5 feet where appropriate. Along Highway 64 from Washington Street to Jones Street the sidewalk should be improved to a 5-foot width with a buffer where available.

### Project 9

The sidepath recommended on Highway 64 between Washington Street and Jones Street will provide a separate bicycle facility following the route of the existing sidewalk. The right-of-way and buffer width between the edge of the roadway and existing sidewalk is adequate for providing the proposed facility adjacent to the sidewalk.



## Projects 10 & 11

The existing plans and studies prepared for the City of Bolivar recommend making Highway 64 a median divided two-lane roadway through this segment of the corridor. Based on the existing traffic volumes on Highway 64 from Jones Street to Tate Road, this project proposes a road diet study be conducted to consider modifying the cross section to either three lanes with a center turn lane or two lanes with a median and provide buffered, 6-foot bike lanes outside the travel lanes.



*Highway 64 (SR-15)  
West of Porter Street*



*Highway 64 (SR-15)  
West of Lauderdale Street*

## Project 12

The right-of-way increases on the corridor between Tate Road and the bridge over Pleasant Run Creek. For this section of Highway 64, a 10-foot multi-use path is recommended for both sides of the corridor to provide a facility for all users separate from the high speed, four-lane roadway.

## Project 13

From the bridge over Pleasant Run Creek to Stevens Road on the north side of Highway 64, this project recommends a 10-foot multi-use path for all users. This facility will separate walkers and bicyclists from the high speed, four-lane roadway creating a friendly environment for all users.

## Project 14

On the west side of Highway 64, from Pleasant Run Creek to Stevens Road, this project recommends a 10-foot multi-use path that will run along the creek to the existing pedestrian bridge. The pedestrian bridge provides a creek crossing and connection to West Park.



*Highway 64 (SR-15) looking east  
East of Stevens Road*





### Project 15

An important feature for promoting walking and biking is properly designed curb ramps that allow strollers, wheelchairs, and users with physical limitations to cross roadways without having to step off the curbs. This plan recommends that all side road crossings on Highway 64 provide accessible curb ramps with truncated dome mats. The side roads noted include Washington Street, Calhoun Street, Lauderdale Street, Union Street, and Polk Street.



*Missing Ramp on Side Road*

### Projects 16 & 17

The crossings at Highway 64 and Main Street and Highway 64 and Jones Street have some deficiencies that should be addressed. It is recommended that the pedestrian signal heads be repaired so the orientation is appropriate for pedestrians line of sight. Replace the pushbuttons with the "Bulldog" style larger buttons. The crosswalk should be restriped to make it clearly visible for the drivers. Also, retime the signals for appropriate pedestrian clearances according to the traffic engineering standards and synchronize signal timings between Jones Street and Tennessee Street (SR-18).



*Crosswalk at Jones Street  
Faded Striping*



*Crosswalk at Main Street  
Pedestrian Signal Aligned Improperly*



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### Project 18

To increase pedestrian crossing safety, provide pedestrian signal heads and pushbuttons for the crossing at Highway 64 and Tennessee Street. Crosswalks are marked on the south leg and east leg of the intersection and the pedestrian signal heads and pushbuttons should be provided for both crossings. The pedestrian crossing marked through the channelized right turn lane should remain unsignalized due to the vehicular movement being controlled by a yield sign. If the right turn lane becomes signalized, then a pedestrian signal can be installed.

### Project 19

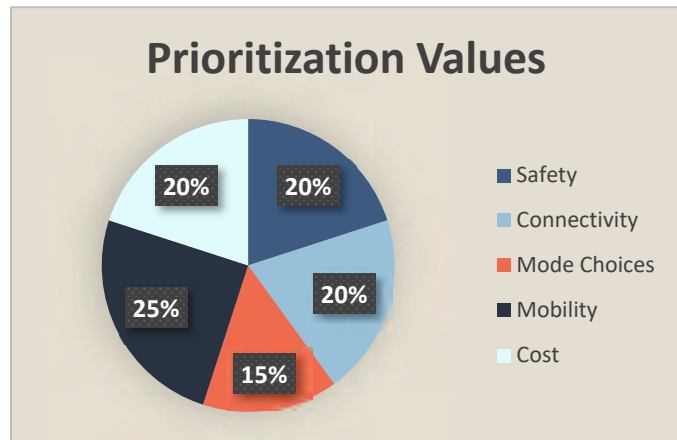
Providing a crossing between West Park and Stevens Road is expected to encourage walking and biking between West Park and Pleasant Run Creek Park. At grade crossings are not recommended for this type of facility so the feasibility of a bridge or tunnel was evaluated. It is anticipated TDOT will not approve tunnels under facilities with this width. Approximately 1400 feet east and south of Stevens Road the geography appears to be appropriate for a pedestrian overpass. A pedestrian bridge will require environmental review and documentation be prepared prior to design of the structure.



## VIII. Prioritization Matrix or Phasing

Determining a prioritization of the projects relies on many factors, from the reason for constructing the project to the cost of design and construction. The projects identified in the bicycle and pedestrian plan recommendations list will help the city reach their goals concerning safety; connectivity of land uses in the city; and creating a more mobile transportation network for all users by providing mode choices. This section of the report will present a process that identifies obstacles to reaching the goals and creates a point system based on data that quantifies the problem, and results in a calculated value based on the need for each project. This combined with the funding sources available can be used for prioritization.

The first step in the prioritization process requires the City of Bolivar to determine a percentage of the total score that applies to each goal based on the benefits expected from construction of the project. An example of the network issue percentage breakdown is shown in the chart to the right using the goals of this mobility plan. The ranking values are based on stakeholder and public input where issues and concerns were identified. Each goal addressed is given a point value based on a measurable variable. Some examples of the issues the City of Bolivar would like to address with suggested measurable data driven factors used for scoring.



### Does the project improve **safety**?

- Provide points to an intersection crossing based on existing conditions of pedestrian crossing facilities and equipment
- Provide points if it separates walkers and/or bikers from vehicular traffic

### Will the project provide **connectivity**?

- Provide points based on the connection provided by the project between walking and biking trip generators based on distance
- Provide points for projects that fill a gap in pedestrian or bicycle facilities

### Does the project provide optional **mode choices**?

- Provide points to projects located on segments with predetermined traffic volume levels and LOS that will benefit from the trip options

### Does the project improve operation of the transportation network (**mobility**)?

- Provide points for projects that address mobility options between residential areas and parks and the denser developed areas



## IX. Implementation

Developing the Highway 64 (SR-15) Bicycle and Pedestrian Plan is only the first step in getting the projects on the ground. Having a plan for implementation of the projects and getting them through the design and construction phases require coordination that begins with identifying funding for the projects. For the purposes of this plan, the possible funding sources were researched and identified and include federal and state funding options that usually require a local match. It is important to realize private funding through developers can also serve as a funding source for some of these projects.

Fund Name	Program Description	Federal Share
<b>Transportation Alternatives Flex</b>	Projects pertaining to pedestrian and bicycle facilities, recreational trails, safe routes to schools projects, community improvements such as historic preservation and vegetation management, environmental mitigation related to stormwater and habitat connectivity	80%
<b>Local Parks and Recreation Fund (LPRF)</b>	Projects that purchase land for parks, natural areas, greenways and recreational facilities; Projects that include trail development and capital projects in parks, natural areas and greenways.	50%
<b>Multimodal Access Grants</b>	Created to support needs of transit users, pedestrians, and bicyclists through infrastructure projects that address existing gaps along state routes	95%
<b>Surface Transportation Block Grant (STBG)</b>	Projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge & tunnel project on any public road, pedestrian and bicycle infrastructure, and transit capital projects	80%



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## Appendix A – Traffic Analysis

# HCS7 Multilane Highway Report

## Project Information

Analyst	TMN	Date	3/17/2021
Agency	The Corradino Group	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	TDOT Station 23
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Direction 1 Geometric Data

Direction 1	7451		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	10.0
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Undivided	Total Lateral Clearance (TLC), ft	6
Free-Flow Speed (FFS), mi/h	39.6		

## Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

## Direction 1 Demand and Capacity

Volume(V) veh/h	0	Heavy Vehicle Adjustment Factor (fhv)	1.000
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1900
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00

## Direction 1 Speed and Density

Lane Width Adjustment (flw)	0.0	Average Speed (S), mi/h	39.6
Total Lateral Clearance Adj. (fLLC)	1.3	Density (D ), pc/mi/ln	0.0
Median Type Adjustment (fm)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fa)	2.5		

## Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	0	Effective Speed Factor (St)	4.42
Effective Width of Volume (Wv), ft	24	Bicycle LOS Score (BLOS)	0.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	A

# HCS7 Multilane Highway Report

## Project Information

Analyst	TMN	Date	3/17/2021
Agency	The Corradino Group	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	TDOT Station 23
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Direction 2 Geometric Data

Direction 2	4968		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	10.0
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Undivided	Total Lateral Clearance (TLC), ft	6
Free-Flow Speed (FFS), mi/h	39.6		

## Direction 2 Adjustment Factors

Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Driver Population SAF	0.975	Final Capacity Adjustment Factor (CAF)	0.968
Driver Population CAF	0.968		

## Direction 2 Demand and Capacity

Volume(V) veh/h	0	Heavy Vehicle Adjustment Factor (fhv)	1.000
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1839
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00

## Direction 2 Speed and Density

Lane Width Adjustment (flw)	0.0	Average Speed (S), mi/h	38.6
Total Lateral Clearance Adj. (fLLC)	1.3	Density (D ), pc/mi/ln	0.0
Median Type Adjustment (fm)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fa)	2.5		

## Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	0	Effective Speed Factor (St)	4.42
Effective Width of Volume (Wv), ft	24	Bicycle LOS Score (BLOS)	0.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	A

# HCS7 Two-Lane Highway Report

## Project Information

Analyst	TMN	Date	3/18/2021
Agency	The Corradino Group	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	TDOT Station 27
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Segment 1

### Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	2000
Lane Width, ft	12	Shoulder Width, ft	2
Speed Limit, mi/h	40	Access Point Density, pts/mi	20.0

### Demand and Capacity

Directional Demand Flow Rate, veh/h	654	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	2.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.38

### Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	37.7
Speed Slope Coefficient	2.56575	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.46568	PF Power Coefficient	0.67698
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	12.2
%Improved % Followers	0.0	% Improved Avg Speed	0.0

### Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	2000	-	-	35.7

### Vehicle Results

Average Speed, mi/h	35.7	Percent Followers, %	66.7
Segment Travel Time, minutes	0.64	Follower Density, followers/mi/ln	12.2
Vehicle LOS	D		

### Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	654	Bicycle Effective Width, ft	14
Bicycle LOS Score	4.72	Bicycle Effective Speed Factor	4.17
Bicycle LOS	E		

### Facility Results

T	Follower Density, followers/mi/ln	LOS
1	12.2	D



# HCS7 Two-Lane Highway Report

## Project Information

Analyst	TMN	Date	3/18/2021
Agency	The Corradino Group	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	TDOT Station 70
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Segment 1

### Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	500
Lane Width, ft	12	Shoulder Width, ft	0
Speed Limit, mi/h	30	Access Point Density, pts/mi	35.0

### Demand and Capacity

Directional Demand Flow Rate, veh/h	888	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	2.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.52

### Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	21.2
Speed Slope Coefficient	1.65686	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.36648	PF Power Coefficient	0.57386
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	32.5
%Improved % Followers	0.0	% Improved Avg Speed	0.0

### Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	500	-	-	19.7

### Vehicle Results

Average Speed, mi/h	19.7	Percent Followers, %	72.1
Segment Travel Time, minutes	0.29	Follower Density, followers/mi/ln	32.5
Vehicle LOS	E		

### Bicycle Results

Percent Occupied Parking	80	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	888	Bicycle Effective Width, ft	14
Bicycle LOS Score	4.65	Bicycle Effective Speed Factor	3.39
Bicycle LOS	E		

### Facility Results

T	Follower Density, followers/mi/ln	LOS
1	32.5	E

# HCS7 Multilane Highway Report

## Project Information

Analyst	TMN	Date	3/17/2021
Agency	The Corradino Group	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	TDOT Station 71
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Direction 1 Geometric Data

Direction 1	9460		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	35.0
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	TWLT	Total Lateral Clearance (TLC), ft	6
Free-Flow Speed (FFS), mi/h	35.0		

## Direction 1 Adjustment Factors

Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Driver Population SAF	0.975	Final Capacity Adjustment Factor (CAF)	0.968
Driver Population CAF	0.968		

## Direction 1 Demand and Capacity

Volume(V) veh/h	0	Heavy Vehicle Adjustment Factor (fhv)	1.000
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1839
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00

## Direction 1 Speed and Density

Lane Width Adjustment (flw)	0.0	Average Speed (S), mi/h	34.1
Total Lateral Clearance Adj. (fLLC)	1.3	Density (D ), pc/mi/ln	0.0
Median Type Adjustment (fm)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (fa)	8.8		

## Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	0	Effective Speed Factor (St)	4.42
Effective Width of Volume (Wv), ft	24	Bicycle LOS Score (BLOS)	0.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	A

# HCS7 Multilane Highway Report

## Project Information

Analyst	TMN	Date	3/17/2021
Agency	The Corradino Group	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	TDOT Station 71
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Direction 2 Geometric Data

Direction 2	6306		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	35.0
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	TWLT	Total Lateral Clearance (TLC), ft	6
Free-Flow Speed (FFS), mi/h	35.0		

## Direction 2 Adjustment Factors

Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Driver Population SAF	0.975	Final Capacity Adjustment Factor (CAF)	0.968
Driver Population CAF	0.968		

## Direction 2 Demand and Capacity

Volume(V) veh/h	0	Heavy Vehicle Adjustment Factor (fhv)	1.000
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1839
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00

## Direction 2 Speed and Density

Lane Width Adjustment (flw)	0.0	Average Speed (S), mi/h	34.1
Total Lateral Clearance Adj. (fLLC)	1.3	Density (D ), pc/mi/ln	0.0
Median Type Adjustment (fm)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (fa)	8.8		

## Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	0	Effective Speed Factor (St)	4.42
Effective Width of Volume (Wv), ft	24	Bicycle LOS Score (BLOS)	0.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	A

# HCS7 Multilane Highway Report

## Project Information

Analyst	TMN	Date	3/17/2021
Agency	The Corradino Group	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	TDOT Station 103
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Direction 1 Geometric Data

Direction 1	8523		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	10.0
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Undivided	Total Lateral Clearance (TLC), ft	6
Free-Flow Speed (FFS), mi/h	39.6		

## Direction 1 Adjustment Factors

Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Driver Population SAF	0.975	Final Capacity Adjustment Factor (CAF)	0.968
Driver Population CAF	0.968		

## Direction 1 Demand and Capacity

Volume(V) veh/h	0	Heavy Vehicle Adjustment Factor (fhv)	1.000
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1839
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00

## Direction 1 Speed and Density

Lane Width Adjustment (flw)	0.0	Average Speed (S), mi/h	38.6
Total Lateral Clearance Adj. (fLLC)	1.3	Density (D ), pc/mi/ln	0.0
Median Type Adjustment (fm)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fa)	2.5		

## Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	0	Effective Speed Factor (St)	4.42
Effective Width of Volume (Wv), ft	24	Bicycle LOS Score (BLOS)	0.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	A

# HCS7 Multilane Highway Report

## Project Information

Analyst	TMN	Date	3/17/2021
Agency	The Corradino Group	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	TDOT Station 103
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Direction 2 Geometric Data

Direction 2	5682		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	45.0	Access Point Density, pts/mi	10.0
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Undivided	Total Lateral Clearance (TLC), ft	6
Free-Flow Speed (FFS), mi/h	39.6		

## Direction 2 Adjustment Factors

Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Driver Population SAF	0.975	Final Capacity Adjustment Factor (CAF)	0.968
Driver Population CAF	0.968		

## Direction 2 Demand and Capacity

Volume(V) veh/h	0	Heavy Vehicle Adjustment Factor (fhv)	1.000
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1900
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1839
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00

## Direction 2 Speed and Density

Lane Width Adjustment (flw)	0.0	Average Speed (S), mi/h	38.6
Total Lateral Clearance Adj. (fLLC)	1.3	Density (D ), pc/mi/ln	0.0
Median Type Adjustment (fm)	1.6	Level of Service (LOS)	A
Access Point Density Adjustment (fa)	2.5		

## Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	0	Effective Speed Factor (St)	4.42
Effective Width of Volume (Wv), ft	24	Bicycle LOS Score (BLOS)	0.00
Average Effective Width (We), ft	24	Bicycle Level of Service (LOS)	A

# HCS7 Multilane Highway Report

## Project Information

Analyst	TMN	Date	3/17/2021
Agency	TDOT	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	ADT Station 109
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Direction 1 Geometric Data

Direction 1	3115		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Access Point Density, pts/mi	5.0
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12
Free-Flow Speed (FFS), mi/h	63.8		

## Direction 1 Adjustment Factors

Driver Population	Mostly Familiar	Final Speed Adjustment Factor (SAF)	0.975
Driver Population SAF	0.975	Final Capacity Adjustment Factor (CAF)	0.968
Driver Population CAF	0.968		

## Direction 1 Demand and Capacity

Volume(V) veh/h	0	Heavy Vehicle Adjustment Factor (fhv)	1.000
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2244
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2172
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00

## Direction 1 Speed and Density

Lane Width Adjustment (flw)	0.0	Average Speed (S), mi/h	62.2
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D ), pc/mi/ln	0.0
Median Type Adjustment (fm)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (fa)	1.3		

## Direction 1 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	0	Effective Speed Factor (St)	5.07
Effective Width of Volume (Wv), ft	36	Bicycle LOS Score (BLOS)	0.00
Average Effective Width (We), ft	42	Bicycle Level of Service (LOS)	A

# HCS7 Multilane Highway Report

## Project Information

Analyst	TMN	Date	3/17/2021
Agency	TDOT	Analysis Year	2021
Jurisdiction	City of Bolivar	Time Period Analyzed	ADT Station 109
Project Description	SR 15 Bike/Ped Plan	Unit	United States Customary

## Direction 2 Geometric Data

Direction 2	2077		
Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Access Point Density, pts/mi	5.0
Lane Width, ft	12	Left-Side Lateral Clearance (LCR), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12
Free-Flow Speed (FFS), mi/h	63.8		

## Direction 2 Adjustment Factors

Driver Population	All Unfamiliar	Final Speed Adjustment Factor (SAF)	0.863
Driver Population SAF	0.863	Final Capacity Adjustment Factor (CAF)	0.852
Driver Population CAF	0.852		

## Direction 2 Demand and Capacity

Volume(V) veh/h	0	Heavy Vehicle Adjustment Factor (fhv)	1.000
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2100
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1789
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00

## Direction 2 Speed and Density

Lane Width Adjustment (flw)	0.0	Average Speed (S), mi/h	55.0
Total Lateral Clearance Adj. (fLLC)	0.0	Density (D ), pc/mi/ln	0.0
Median Type Adjustment (fm)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (fa)	1.3		

## Direction 2 Bicycle LOS

Flow Rate in Outside Lane (vOL),veh/h	0	Effective Speed Factor (St)	5.07
Effective Width of Volume (Wv), ft	36	Bicycle LOS Score (BLOS)	0.00
Average Effective Width (We), ft	42	Bicycle Level of Service (LOS)	A



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## Appendix B – Survey Results

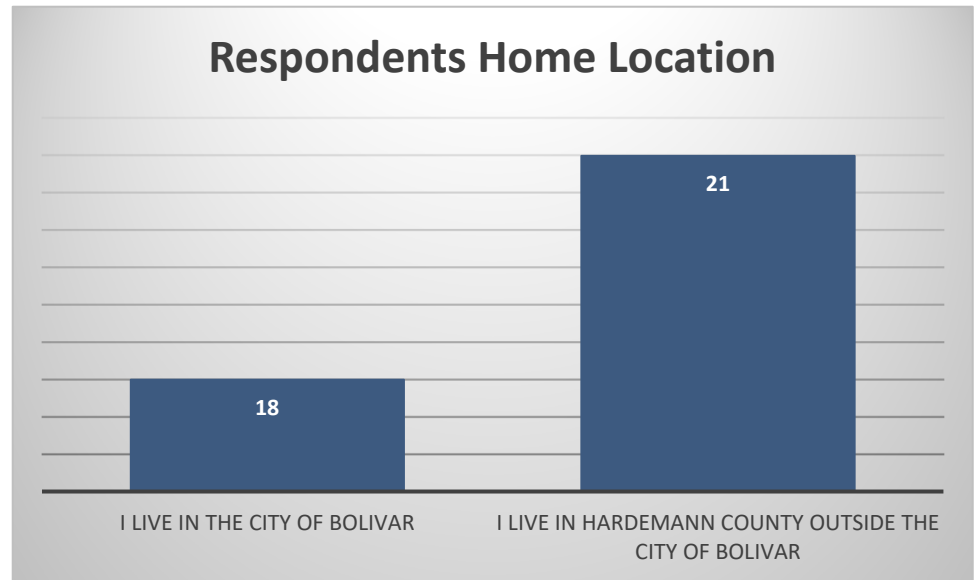




## Highway 64 (SR 15) Bike/Ped Plan Survey #1 Results

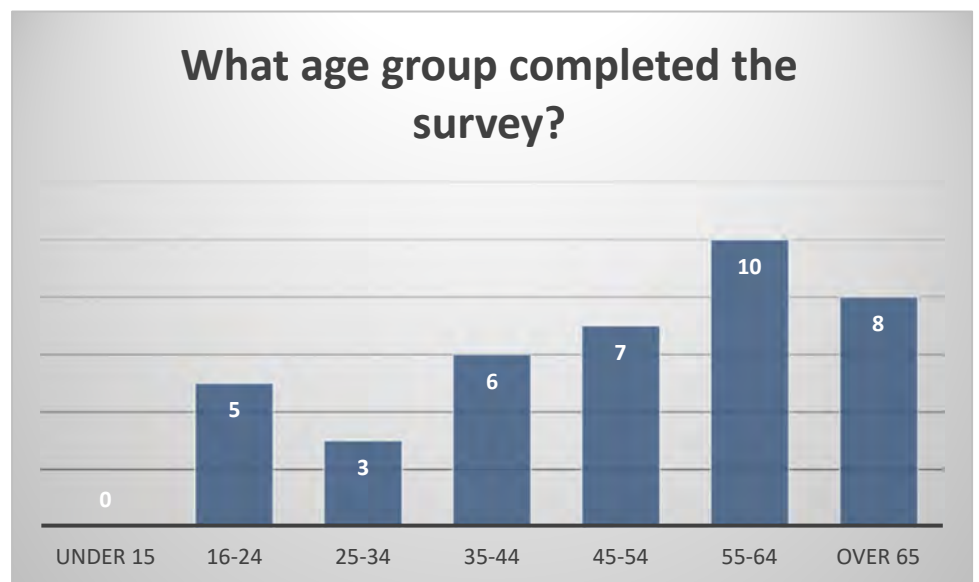
### Who completed the survey?

Of the 35 respondents to our survey, there were 18 that live within the City of Bolivar and 21 that live in Hardemann County outside the City of Bolivar.



### What age were the respondents?

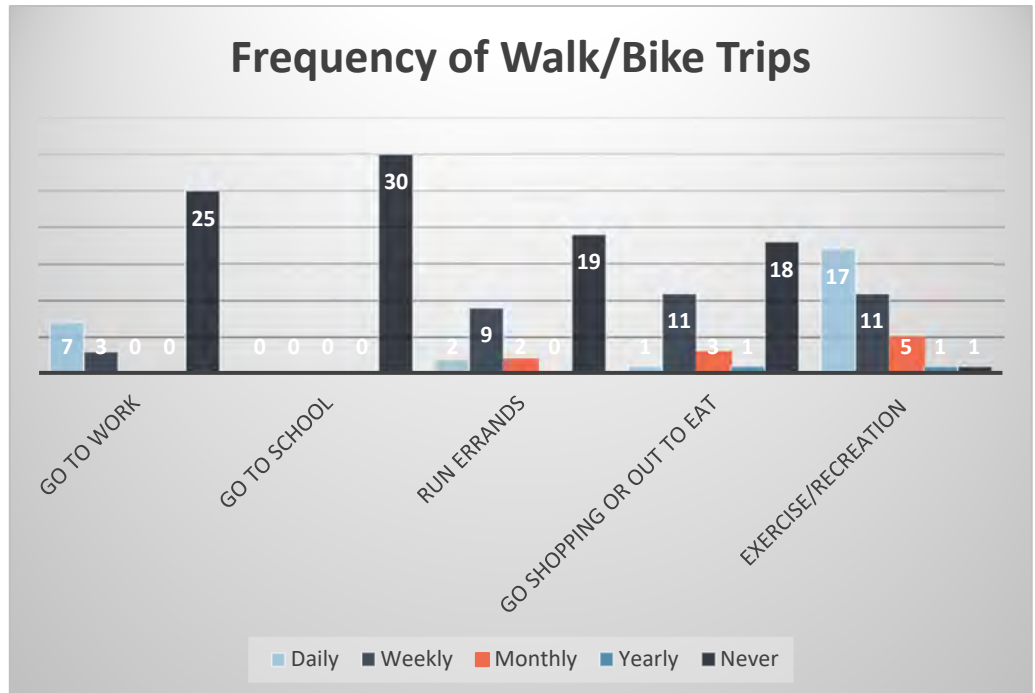
The age of the survey respondents was fairly evenly distributed. The largest number of respondents fell between the ages of 55 and 64 with a similar number of respondents being over 65. The fewest number of respondents were in the 25-34 age range.





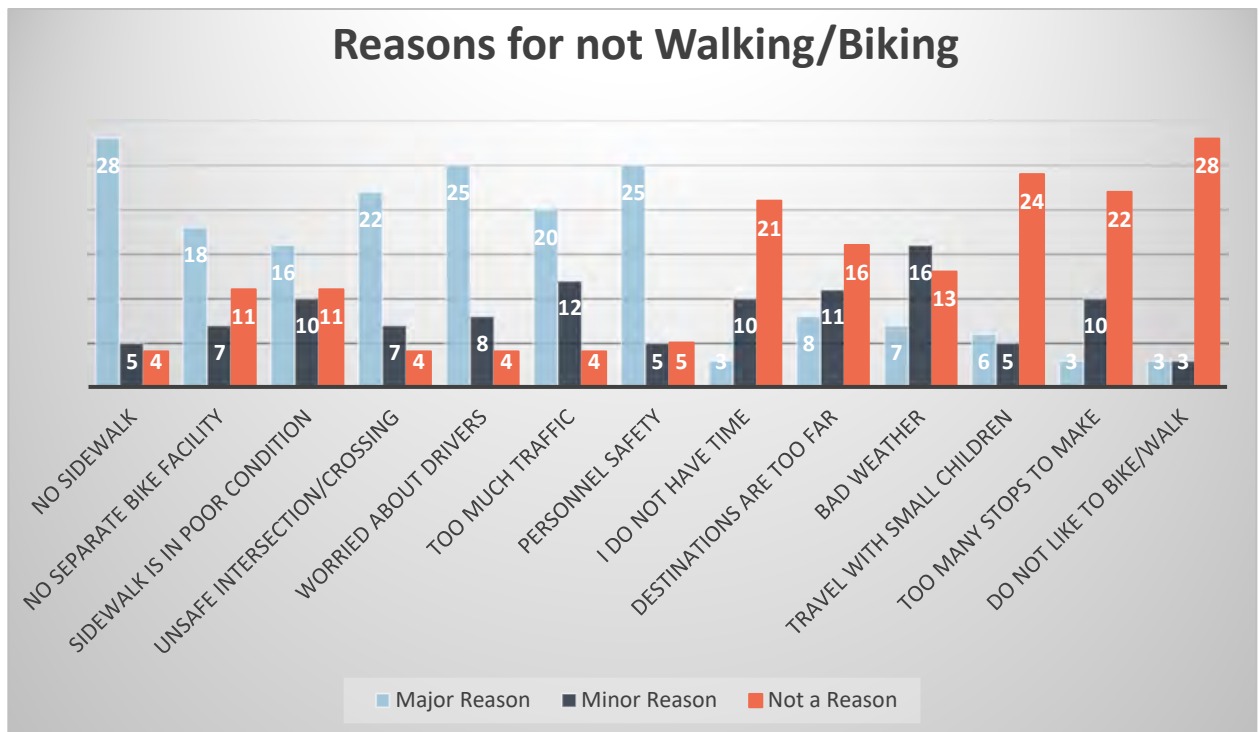
### How often do you walk or bike for a specific purpose?

Trips made by walking and biking on a daily basis are typically for exercise or recreation. There are 11 people that walk or bike weekly for shopping or eating out and 9 people that walk or bike to run errands.



### Why do you not Walk or Bike more often?

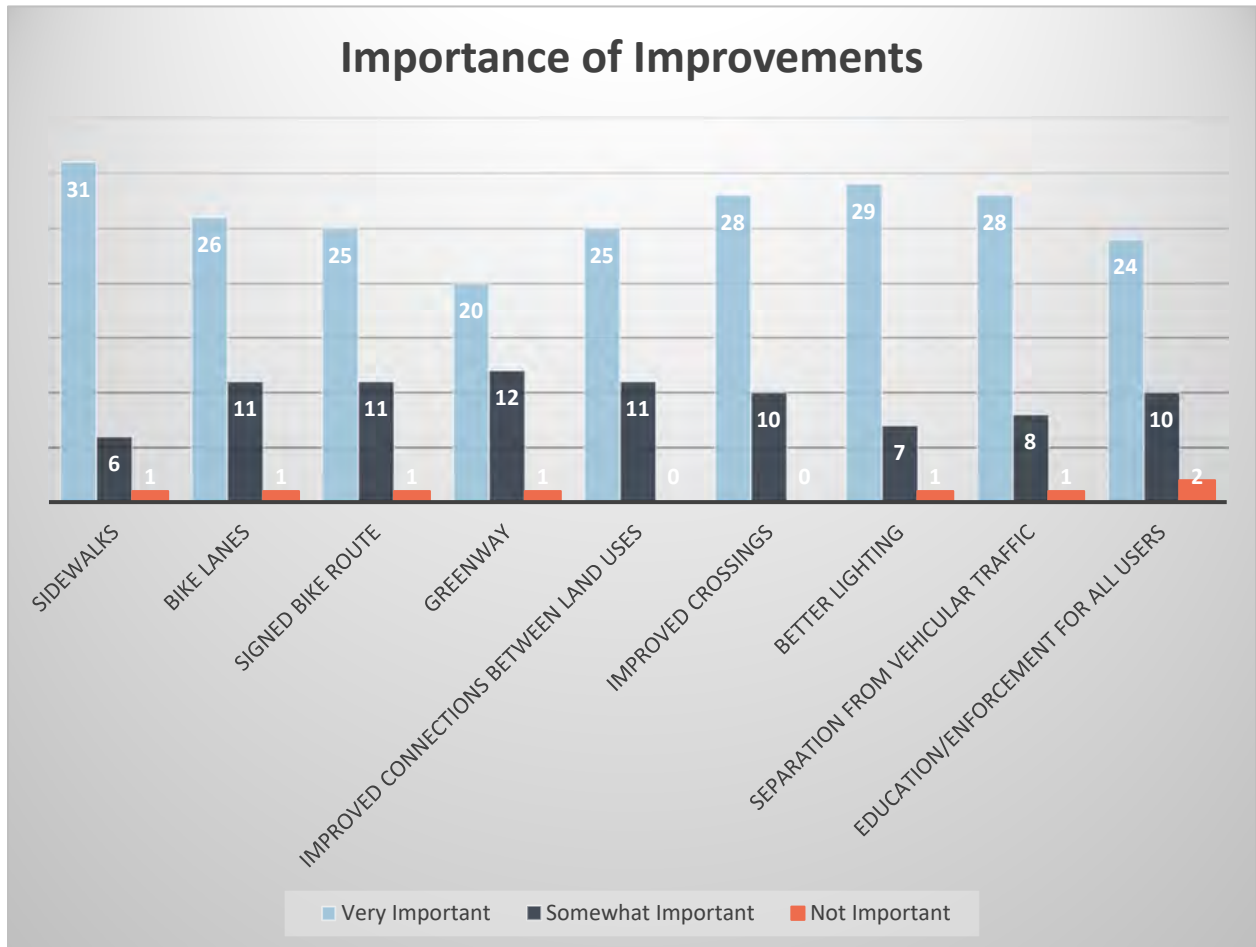
If more than 20 people responded as something being a major reason, it was classified as a major obstacle to walking and biking. These major obstacles along Highway 64 (SR 15) include lack of sidewalks, unsafe crossings, worried about driver behavior, too much traffic, and being worried about personnel safety. Other major obstacles that had 18 and 16 people, respectively, respond with major reasons to not walk or bike include lack of separate bike facilities and sidewalks being in poor condition.





**What improvements are important to increase walking and biking trips?**

As shown in the chart below, all of the potential improvement options yielded positive responses for level of importance. To support walking and biking trips, people would like to see more sidewalks, bike lanes, improved connections and improved crossings. In addition, better lighting and separation from vehicular traffic are improvements to the system that will support walking and biking trips.





**Additional comments provided to help us create a bicycle and pedestrian plan for Highway 64**

<b>1</b>	Bicycling and walking improves health and fitness. It will also benefit a personal budget by allowing safe walking to stores and parks.
<b>2</b>	Start with repairing existing sidewalks; then expand number and location of sidewalks; then add bike routes.
<b>3</b>	For many years I rode a bicycle to get fit. I lost a lot of weight and did well. I once rode from Bolivar to Whiteville & back and the next day rode from Bolivar to Hornsby & back. I also rode at Shiloh more times than I can count and Tanglefoot Trail (Rails to Trails) in MS. Hands down i had rather ride at Shiloh or Tanglefoot. Riding on Hwy 64 shoulder is nerve wracking with tons of metal whizzing by at 70+ mph. Also absolutely no shade in warm weather. At Shiloh people drive very slow, there is ample shade, and the park is very well patrolled. Tanglefoot is a dream but is a good 1.5 hour drive away. A trail to itself in the back country for the most part. Shade, no cars, and is patrolled with golf carts. Honestly, painting some lines on SR15 is not going to change my mind a bit. Riding in Bolivar has become hazardous over the past few years. Drag racers have just about taken over the streets. It was bad enough with inconsiderate drivers. Kudos though Bolivar for the new parks and places to walk. Just my thoughts. I know its expensive to do something like Tanglefoot but MS did it out in the middle of nowhere in MS. 44 Miles long.t
<b>4</b>	Has anyone ever considered creating a rails to trail on the unused train rail from Bolivar to Toone and beyond towards Jackson? I ride rails to trails in other states and see the benefit not only for health, but to towns similar to Bolivar as far as shopping and dining.
<b>5</b>	I don't bike as much as I would like to because of the safety issues and not having a dedicated bike trail.
<b>6</b>	A sidewalk/bike route is needed on Hwy 64E
<b>7</b>	make a sidewalk down Hwy 125 S Dixie Hills Baptist; Sain Rd. to Cliff Rd.; Hwy 64 West to Vildo; Hwy 64E to 3way Grocery; DANGEROUS TO PEDESTRIANS ON SHOULDER!!! People can't walk to Dollar General!!!
<b>8</b>	Partially started just need finishing good job so far
<b>9</b>	We need this!



**THE CORRADINO GROUP**

